

## PATENT COOPERATION TREATY

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## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference CPGNA30567		<b>FOR FURTHER ACTION</b> See Form PCT/IPEA/416	
International application No. PCT/CN03/00666	International filing date (day/month/year) 13.Aug. 2003(13.08.2003)	Priority date (day/month/year) 08.Aug. 2003(08.08.2003)	
International Patent Classification (IPC) or national classification and IPC G01N33/53 C12Q1/00 A61K51/12			
Applicant TSINGHUA UNIVERSITY et al			
<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of <u>3</u> sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input type="checkbox"/> (sent to the applicant and to the International Bureau) a total of _____ sheets, as follows:</p> <p><input type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic _____, containing a sequence listing and/or tables related thereto, in electronic form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p>			
<p>4. This report contains indications relating to the following items:</p> <p><input checked="" type="checkbox"/> Box No. I Basis of the report</p> <p><input type="checkbox"/> Box No. II Priority</p> <p><input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p><input type="checkbox"/> Box No. IV Lack of unity of invention</p> <p><input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p><input type="checkbox"/> Box No. VI Certain documents cited</p> <p><input type="checkbox"/> Box No. VII Certain defects in the international application</p> <p><input type="checkbox"/> Box No. VIII Certain observations on the international application</p>			
Date of submission of the demand 13.Aug. 2003(13.08.2003)		Date of completion of this report 02.Dec. 2005(02.12.2005)	
Name and mailing address of the IPEA/CN The State Intellectual Property Office, the P.R.China, 6 Xitucheng Rd., Jimen Bridge, Haidian District, Beijing, China 100088 Facsimile No. 86-10-62019451		Authorized officer NI Xiaohong Telephone No. 86-10-62085753	

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.  
PCT/CN03/00666

## Box No. I Basis of the report

## 1. With regard to the language, this report is based on:

- ☒ the international application in the language in which it was filed
- ☐ a translation of the international application into \_\_\_\_\_, which is the language of a translation furnished for the purposes of:
- ☐ international search (Rules 12.3(a) and 23.1(b))
- ☐ publication of the international application (Rule 12.4(a))
- ☐ international preliminary examination (Rules 55.2(a) and/or 55.3(a))

2. With regard to the elements of the international application, this report is based on (*replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report*):

- ☒ the international application as originally filed/furnished
- ☐ the description:
- pages \_\_\_\_\_ as originally filed/furnished
- pages \* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- pages \* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- ☐ the claims:
- pages \_\_\_\_\_ as originally filed/furnished
- pages \* \_\_\_\_\_ as amended (together with any statement) under Article 19
- pages \* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- pages \* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- ☐ the drawings:
- pages \_\_\_\_\_ as originally filed/furnished
- pages \* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- pages \* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing.

3. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages \_\_\_\_\_
- ☐ the claims, Nos. \_\_\_\_\_
- ☐ the drawings, sheets/figs \_\_\_\_\_
- ☐ the sequence listing (*specify*): \_\_\_\_\_
- ☐ any table(s) related to sequence listing (*specify*): \_\_\_\_\_

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

- ☐ the description, pages \_\_\_\_\_
- ☐ the claims, Nos. \_\_\_\_\_
- ☐ the drawings, sheets/figs \_\_\_\_\_
- ☐ the sequence listing (*specify*): \_\_\_\_\_
- ☐ any table(s) related to sequence listing (*specify*): \_\_\_\_\_

\* If item 4 applies, some or all of those sheets may be marked "superseded."

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.  
PCT/CN03/00666**Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement****1. Statement:**

Novelty (N)	Claims	12,14-18,23-25,27,29,35-36	YES
	Claims	1-11,13,19-22,26,28,30-34	NO
Inventive step (IS)	Claims	12,24,25,27,29,35-56	YES
	Claims	1-11,13-23,26,28,30-34	NO
Industrial applicability (IA)	Claims	1-56	YES
	Claims	NONE	NO

**2. Citations and explanations (Rule 70.7)**

D1= US,A1,20020164271 D2= CN1376759A D3= CN1347958A D4=WO9109141A1

**1 Claim1-11,13,19-22,26,28,30-34 are lack of novelty step under PCT 33(2).**

Claim1: D1 discloses a kind of nanocrystal (See fig.1-3 claims 1-7 and page 1-4) , and it comprises a core and the core comprises magnetic bead(42) and polymer (24)/quantum dots (26) near the surface of the magnetic bead(42), the quantum dots show fluorescent spectra, and the nanocrystal has a radius of 1-10 nm . Therefore, D1 disclosed all the features in the claim1, Claim 1 is lack of novelty under PCT Article 33(2).

Additional features of dependent claims 2 -11,13,19-22,26,28,30-34 are also disclosed in D1(See fig.1-3 claim 1-7 and page 1-4). Therefore, claims 2 -11,13,19-22,26,28,30-34 are not considered to be novel set out PCT Article 33(2).

**2 Because the same inventions of claims 12,14—18,23-25,27, 29 , 35-56 are not found in the prior art, so claims 12,14—18,23-25,27,29 meet novelty under PCT Article33(2).****3 Claims 14-18,23 are lack of inventive step under PCT Article 33(3).**

Claims 14-18: D2 discloses the additional technical features of claims 14-16,18 (see page 1-6) , and D3 discloses the additional technical features of claim 17 (see page 1-4) and the materials disclosed are also used as converting fluorescent materials to show fluorescent upon optical excitation, so it is obvious to the skilled person in the art to combine D1 with D2 and get the invention of claims 14-16,18, and combine D1 with D3 and get the invention of claim 17,so claims 14-18 are lack of inventive step under PCT Article 33(3).

Claim 23: D4 discloses the additional technical features of claim 23 (see page 1-32) , and the structure disclosed in D4 is also used in the same technical field and has the same function, so it is obvious to the skilled person in the art to combine D1 with D4 and get the invention of claim 23, so claim 23 is lack of inventive step under PCT Article33(3).

5 The additional technical features of claims 12, 24, 25, 27, 29 and the inventions of claims 35-56 are not disclosed in D1-D4. Therefore, as a whole, the inventions of claims 12, 24, 25, 27, 29, and the inventions of claims 35-56 are not considered to be obvious to the skilled person in the art , claims 12, 24, 25, 27, 29, 35-56 invovle an inventive step under PCT Article 33(3).

6 Claims 1-56 meet industrial applicability as defined in PCT Article 33(4) since the matters of the claims 1-56 can be made or used in the fluorescent magnetic paritcles field.